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for you, start a signal fire by night or a smoke by day from some little eminence, and then stay by it until help comes. If you must depend on your own exertions, think carefully over all the possibilities and adopt a plan of action and adhere to it. Remember the proneness of the lost person to exaggerate the distance he has traveled. It is well to count paces and to remember that about 2,000 make a mile. You will thus have a good check on the distance that you go, and at the same time will keep your mind occupied.

"Keep your direction true by traveling toward or from some selected landmark, or by the sun during the day or a star at night, or by keeping with or against or in some fixed direction in relation to the wind. If you think these things out and have studied the country beforehand, so that you know the relation of a road, or a ranch, or a spring, or a river to a given landmark or to the points of the compass, you should have no difficulty in finding your way again. With some persons, however, the faculty of getting lost amounts to genius. They are able to accomplish it wherever they are. The only suitable advice for them is to keep out of the desert. There are safer places in which to exercise their talent. Still others have a geographic instinct and a power of geographic observation which defies time and place. They can not be lost anywhere. For such these lines are not written."

GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Annual Meeting of the Society. The annual meeting of the Society was held at the Engineering Societies' Building No. 29 West 39th St., on Tuesday, January 24th, 1911, at 8.30 o'clock.

Vice President Greenough in the Chair.

The following persons recommended by the Council were elected Fellows:

W. M. Cahoone,
Robert Hollister Chapman,
W. R. Harris,
Rev. Frederick Charles Meredith,
Albert M. Post Mitchell,
Ruel W. Poor,
Paul J. Rainey,
Wallace Reid,
Charles Remsen,
Walter Clark Runyon,
J. Sanford Saltus,
Edwin K. Scheftel,
Robert Scoville,
John Boulton Simpson,
Charles Edward Souther,
Lorillard Spencer,
Prof. J. E. Spingarn,
Enrico N. Stein,
Alexander H. Stevens,
Robert M. Thompson,
Samuel Thorne, Jr.,
Orville H. Tobey,
Edward Tuck,
F. Delano Weekes.

REPORT OF THE COUNCIL

The Annual Report of the Council was presented and read by its Recording Secretary, Mr. Levi Holbrook:

January 19, 1911.

To the American Geographical Society:

The Council respectfully submits the following report for the year 1910:

The number of Fellows on the 1st of January was 1,254. The additions during the year were 60. The losses by death, resignation, etc., were 104, and the total Fellowship on December 31st was 1,210, of which number 359 were Life Fellows.

There have been added to the Library 840 books, 3,109 periodicals and pamphlets, 322 maps and charts and 20 atlases.

Seven meetings of the Society were held, at which addresses were made by Rear Admiral Colby M. Chester, U. S. N., retired, Prof. James H. Brewster, Prof. A. V. Williams Jackson, Sir Ernest Shackleton, Mr. Henry G. Bryant, Mr. Frederick Monsen and Mr. C. J. Blanchard.

The Cullum Geographical Medal has been awarded to Prof. Dr. Hermann Wagner of Göttingen, Germany, in recognition of his great services to the science of geography.

The Charles P. Daly Medal has been awarded to Grove Karl Gilbert, LL.D., of Washington, D. C., in recognition of his many notable contributions to knowledge in the field of physical geography.

There have been published in the *Bulletin,* besides the Geographical Record, the Scientific Notes, and the Book Reviews and Bibliographical Lists, 49 original papers.

The Society's collection of maps and other appliances used by teachers of geography in European schools, which was exhibited in New York, in the winter of 1908-1909, was exhibited later in ten Universities and Normal Schools of the Middle West, and during the past year has been on exhibition at the Leland Stanford, Jr., University and the University of California, the University of Virginia and the Northern Illinois State Normal School of DeKalb, Illinois, and will continue to be shown elsewhere as applications are made for it. Ten institutions, from Massachusetts to Nebraska, have already applied and will receive the collection in due time.

The Society has received twenty-five thousand dollars bequeathed to it, for its corporate purposes, by its late respected Vice-President, Darius Ogden Mills.

Members of the Council and friends of the Society, who prefer not to be named, have continued to make generous contributions to the special Building Fund established last year and work has progressed on the beautiful new edifice, at 156th Street and Broadway, which is to be the future home of the Society. It will probably be ready for occupancy during the summer of 1911.

For the financial condition of the Society reference is respectfully made to the report of the Treasurer which is herewith presented.

All of which is respectfully submitted.

CHANDLER ROBBINS,
Chairman.

LEVI HOLBROOK,
Secretary.

REPORT OF THE TREASURER

The report of the Treasurer, Mr. Henry Parish, Jr., for the year 1910, was read as follows:

GENERAL ACCOUNT

The Treasurer respectfully reports:

On January 1st, 1910, there was on hand a balance of..		$2,384.71
During the year there have been received for Fellowship Dues, Sales of Publications, Interest on Investments, &c., &c.	$22,393.07	
Legacy from the Estate of D. O. Mills	$25,000.00	$47,393.07
Total		$49,777.78
There have been expended for Salaries, Meetings, Library, Publications, House Expenses, Insurance, Postage, &c.	$22,016.04	
Invested in guaranteed mortgages	$27,300.00	$49,316.04
Balance on hand December 31, 1910		$461.74

The Reports of the Council and the Treasurer were approved and ordered on file.

REPORT OF THE SPECIAL COMMITTEE

The Report of the Special Committee, charged with the duty of selecting candidates for the offices to be filled, was presented and read:

NEW YORK, DECEMBER, 15TH, 1910.

The Special Committee, appointed November 17, 1910, to nominate and recommend to the Society suitable persons to be elected in January, 1911, to fill vacancies then existing in its offices, report that they recommend the election of the following named persons to the offices designated:

President,	ARCHER M. HUNTINGTON,	for term	expiring	1912
Vice-President,	JOHN GREENOUGH,	"	"	1914
Treasurer,	HENRY PARISH, JR.,	"	"	1912
Domestic Corresponding Secretary,	ARCHIBALD D. RUSSELL,	"	"	1914
Councillors,	JOHN S. BARNES, JAMES B. FORD, OTTO H. KAHN, WALTER B. JAMES, M.D., FRANCIS LYNDE STETSON,		"	1914

[SIGNED.] HAMILTON F. KEAN,
ANDREW G. AGNEW, } *Committee.*

The vote of the Society was unanimously in favor of the persons recommended by the Council, and they were declared duly elected.

Vice-President Greenough, then introduced the speaker of the evening, William Edgar Geil, LL.D., who addressed the Society on "The Land of the Great Wall." Stereopticon views were shown.

The Society then adjourned.

AMERICA

Our Coal-Mining Industry in 1910. According to reports received by the U. S. Geological Survey from coal-mine operators and others familiar with the industry, the production of coal in the United States during 1910 was between 475,000,000 and 485,000,000 short tons, a considerable increase from the output of 459,715,704 short tons in 1909 and approximately within 1 per cent. of the maximum previous record of 480,363,424 tons, produced in 1907.

The most important factor influencing the industry was the prolonged strike in Illinois and the Southwestern States. Notable increases in production were made in the western counties of Kentucky, in western Pennsylvania, and in Ohio, West Virginia, Alabama, Colorado, New Mexico, and Montana. The States whose production was reduced by the strike were Illinois, Kansas, Missouri, Arkansas, and Oklahoma. Of the total production in 1910 the anthracite mines of Pennsylvania contributed nearly 83,000,000 short tons and the bituminous mines between 390,000,000 and 400,000,000 tons.

Appraising our Coal Lands. The U. S. Geological Survey, in November classified 1,141,071 acres of western lands as "Coal Lands" with an appraised value of $78,111,900. The total area now classified by the Survey as coal land, is 12,211,131 acres, having an appraised value of $495,210,779. These coal lands, at the minimum price formerly received, would have a value of only $189,942,114, the difference in favor of the Government being $305,268,665. The total area of coal lands at present withdrawn from sale amounts to 83,714,235 acres.

Mining in Alaska in 1910. The annual report on the mineral resources and production of Alaska for 1910 is now in preparation under the direction of Alfred H. Brooks, of the U. S. Geological Survey. The value of the mineral output in 1910 is estimated at $17,400,000; the value in 1909 was $21,146,423. Of this, the estimated value of the gold output in 1910 was $16,360,000; that of 1909, $20,371,078. The copper production in 1910 is estimated to have been 5,600,000 pounds, valued at about $740,000; that of 1909 was 4,124,705 pounds, valued at $536,211. The value of the other mineral products, including silver, lead, gypsum, marble, and coal, is estimated at $300,000—an increase over that of 1909. The total value of the Alaska mineral production since 1880, when mining was begun, is, in round numbers, $186,000,000, of which $179,000,000 is represented by the value of the gold output.

The decrease in the value of the mineral production is due to the falling off in the output of Fairbanks, Seward Peninsula, and some of the smaller placer districts. Except in these camps and the coal fields, the output from all the mining districts increased. Copper mining was prosperous and much development work was done on the copper deposits. More has been accomplished than in any previous year in the development of auriferous lodes. Much work was also done toward installing large mining plants for working low-grade placer deposits. As in previous years, the lack of cheap fuel is the one great hindrance to the advancement of the mining industry in Alaska.

A Wyoming Conglomerate. J. L. Rich ("The Physiography of the Bishop Conglomerate," *Journ. Geol.* Vol. XVIII, 1910, pp. 601-632) has described a conglomerate and its relationships in the plateau region north of the east end of the Uinta Mountains. He shows clearly that it is a subaërial deposit not at all connected with the phenomena of glaciation and that before it was deposited there was a period of planation followed by late Miocene or early Pliocene mountain building and a change of climate toward aridity, the Bishop conglomerate being a desert fan deposit. Following this there have been three periods of erosion separated by two periods of aggradation, the variations being interpreted as due to changing climate. L. M.

MR. RADFORD IN NORTHERN CANADA. Mr. Harry V. Radford who has spent the past two years in Northern Canada writes to the Society that in October last, while paddling down the Peace River with one white assistant, he was caught by the ice on Nov. 1, and frozen in at Fort Vermilion. He left that station on Dec 1, with three men, two sleds and eight dogs for Fort Smith, crossing through the heart of the wood bison habitat, by a route not previously followed by any traveler. Much new data were collected concerning the wood bison and some geographical discoveries were made, which will appear upon the map he is preparing of the country west of Slave River. Though the chances of receiving fresh supplies, of which he is in need, are somewhat dubious he proposes next summer to go, with two assistants, as far as Baker Lake, by canoe from Great Slave Lake, and to carry out as much of his plan of exploratory travel as is possible.

THE PANAMA CANAL. The Isthmian Canal Commission has issued a small pamphlet, "The Panama Canal" containing the chief facts relating to the Canal. The following data are taken from it:

The entire length of the Canal from deep water in the Atlantic to deep water in the Pacific is about 50½ miles. Its length on land is about 40½ miles. In passing through it from the Atlantic to the Pacific, a vessel will enter a channel with a bottom width of 500 feet in Limon Bay, follow this for about seven miles to Gatun where it will enter a series of three locks, and be lifted 85 feet to the level of Gatun Lake. It will sail at full ocean speed through this lake, in a channel varying from 1,000 to 500 feet in width for a distance of about 24 miles, to Bas Obispo, where it will enter the Culebra Cut. It will sail through the Cut, a distance of about nine miles, in a channel with a bottom width of 300 feet, to Pedro Miguel. There it will enter a lock and be lowered 30⅓ feet to a small lake, at an elevation of 54⅔ feet above sea level, and will sail through this for about 1½ miles to Miraflores. There it will enter two locks in series and be lowered to sea level, passing out into the Pacific through a channel about 8½ miles in length, with a bottom width of 500 feet. The depth of the approach channel on the Atlantic side, where the tidal oscillation does not exceed 1½ feet, will be 41 feet at mean tide, and on the Pacific side, where the maximum oscillation is 23 feet, the depth will be 45 feet at mean tide.

The Gatun Dam, which will form Gatun Lake by impounding the waters of the Chagres and other streams, will be nearly 1½ miles long, measured on its crest, nearly ½ mile wide at its base, about 400 feet wide at the water surface, about 100 feet wide at the top, and its crest as planned will be at an elevation of 115 feet above mean sea level, or 30 feet above the normal level of the Lake.

Gatun Lake will cover an area of 164 square miles with a depth in the ship channel varying from 85 to 45 feet. Throughout the first 16 miles from Gatun, the width of the channel will be 1,000 feet; then for 4 miles, it will be 800 feet, and for 4 miles more 500 feet, when the entrance to Culebra Cut, at Bas Obispo, will be reached. The water level in the Cut will be that of the Lake, and the bottom width of the channel will be 300 feet.

The Canal Zone contains about 448 square miles. It begins at a point three marine miles from mean low water mark in each ocean, and extends for five miles on each side of the center line of the route of the Canal. Of the 448 square miles of Zone territory, the United States, owns about 322 square miles.

There will be 12 locks in the Canal, all in duplicate three pairs in flight at Gatun, with a combined lift of 85 feet; one pair at Pedro Miguel, with a lift of 30⅓ feet, and two pairs at Miraflores, with a combined lift of 54⅔ feet at mean tide. The dimensions of all are the same— a usable length of 1,000 feet, and a usable width of 110 feet. Each lock will be a chamber, with walls and floor of concrete, and water-tight gates at each end.

No vessel will be permitted to enter or pass through the locks under its own power. Electricity will be used to tow all vessels into and through the locks, and to operate all gates and valves, power being generated by water turbines from the head created by Gatun Lake.

The time required to pass a vessel through all the locks is estimated at 3 hours, one hour and a half in the three locks at Gatun, and about the same time in the three locks on the Pacific side. The time of passage of a vessel through the entire Canal is estimated as ranging from 10 to 12 hours, according to the size of the ship and the rate of speed at which it can travel.

The total excavation, dry and wet, for the Canal as originally planned, was estimated at 103,795,000 cubic yards, in addition to the excavation by the French companies. Changes in the plan of the Canal, made subsequently by order of the President, increased the amount to 174,666,594 cubic yards. On April 1, 1910, the excavation exceeded 103,000,000 cubic yards, nearly the entire amount called for in the original plan.

The amount of material taken out by the Old and New Panama Canal Companies was 78,146,960 cubic yards, of which it is estimated 29,908,000 cubic yards will be utilized in the adopted plan of Canal.

In the month of November, 1910, there were approximately 45,000 employees on the Isthmus on the rolls of the Commission and of the Panama Railroad, about 5,000 of whom were Americans. There were actually at work on December 7, 1910, 35,737 men, 29,686 for the Commission, and 6,051, for the Panama Railroad Company.

ARTESIAN WATER POSSIBILITIES IN ARGENTINA. Señor Ramos Nexia, Argentine Minister of Public Works, has adopted a plan for making surveys for the determination of artesian water conditions along the lines of the national railways. These railroads, already far advanced, are being built because the Government intends to provide convenient communication with the vast agricultural and grazing lands of Argentina and Patagonia which are remote from the more populous districts of the Republic. The need of pure water for locomotive use as well as for other purposes has thus been made critically evident.

Señor Nexia accordingly contemplates topographical and geological surveys, similar to those carried out by our own Government survey. *Science* (Feb. 10, 1911) says that last summer Señor Nexia applied to the U. S. government for the services of a geologist and such assistants as he might need, and our government has responded cordially to that request. Mr. Bailey Willis has accordingly entered into a contract for the term of two years, to execute topographical and geological surveys for the specific purpose of ascertaining artesian water possibilities in those districts which the minister may designate. With him are associated Mr. Chester W. Washburne, of the U. S. Survey, Mr.

J. R. Pemberton, of Stanford University, and Mr. Wellington D. Jones, of Chicago University, as geologists, and Mr. C. L. Nelson and Mr. W. B. Lewis, as topographers, and the party sails shortly for Argentina to enter upon the work. While these surveys have a specific purpose, their possibilities of usefulness in developing the natural resources and encouraging settlement in the regions surveyed will not be overlooked, and the work will be founded on these scientific studies, upon which alone practical conclusions can safely rest. Thus it is hoped that a definite contribution to knowledge in geography and geology may be made.

EXPLORATIONS IN DUTCH GUIANA. In June, 1908, Lieut. Eilerts de Haan set out for the Upper Surinam River to connect the triangulation of the Dutch expedition in the east (Tapanahoni and Gonini) with the western surveys (Coppename and Saramacca) and to cross if possible the watershed to the basin of the Corentyne river. This plan was successfully carried out. Lieut. de Haan found that at Goddo two streams, the Gran Rio and the Pikien, unite to form the Surinam. Both these streams were ascended and it was proved that the Wilhelmina Range is not connected with the Tumac-Humac Mountains. The Wilhelmina Range extends from east to west for about sixty miles with a breadth of about twenty-five miles. The *Tijdschrift* of the Royal Dutch Geographical Society, (Vol. 27, Nos. 3 and 4) gives details of the triangulation, a list of plants collected, etc. The rivers are full of falls and rapids and the country is thickly wooded. The sad news comes that Lieut. de Haan has since died as he was about to start on a new expedition into the interior of the colony.

AFRICA

SLEEPING SICKNESS. Under the title "Sleeping Sickness: How to avoid Infection," The Sleeping Sickness Bureau of London has printed a small pamphlet for the use of travellers and residents in Tropical Africa. It gives an account of *Glossina palpalis* and other biting flies, tells how to recognize the species which conveys sleeping sickness, describes the various circumstances under which travelers are liable to be bitten and illustrates methods of protecting Europeans from the disease.

FREIGHT AUTOMOBILES IN THE CONGO. The most ambitious of the projects for extending freight automobile routes through parts of the Belgian Congo is now far advanced. The route, 700 miles long, which is to join the Congo and the Nile Rivers, is completed for about half the way. The road starts at the head of navigation on the Rubi tributary of the Middle Congo, extends to the northeast across the headstreams of the Mobangi, the greatest Congo affluent and will go on to Rejaf on the Nile, a station some forty miles south of Gondokoro to which steamers from Khartum are now making regular trips. The Belgian Congo, for some years, has promoted the building of such routes in advance of the development of an adequate system of railways. It is desired to dispense as rapidly as possible with costly transportation on the backs of men. One of these routes was started from Stanley Pool to the southeast with the intention of penetrating the Kwango-Kasai country which has rich resources in rubber. Another project was to extend an automobile line from Lusambo at the head of navigation on the Sankuru affluent of the Kasai with the idea of tapping the mineral region of southern Katanga. This project may not be carried out in view of the present plans for the construction of a railroad to connect Lusambo with Katanga. For some years the Congo Government has given much attention to the development of an automobile freight carrier well-adapted for tropical conditions.

Types of machines carrying from two to three tons of freight were finally evolved which seem fairly well to answer the requirements. The best of roads are essential for this service.

ASIA

DR. MUSIL'S EXPLORATIONS IN ARABIA. The *Geographical Journal* reports that Dr. Alois Musil carried out in 1910, explorations in northern Arabia in the region adjoining the Hejaz railway. Leaving Vienna in April, with Dr. Leopold Kober, geologist, and Rudolf Thomasberger, cartographer, he proceeded by way of Beirut and Damascus to Maan, where he organized his caravan. During two months he made a thorough examination of the imperfectly known area extending from Maan southwards to Al Gaw, and from the Red Sea eastward to Teima and the Wadi Sirhan, and including the Biblical land of Edom. The journey was not without danger in the country of fanatical tribes towards the south, whose suspicions were aroused. There had been no rain for four years, and the temperature on one occasion rose to 131° Fahr., but the traveller was able to secure a large amount of ethnographical and linguistic material, lists of names, drawings, copies of inscriptions, etc. One result Dr. Musil believes, is the identification of the true Biblical Sinai. His companions carried on work in other departments. Plants and insects were collected and geological investigations made, the country being found to consist of granite, sandstone and basalt, succeeding each other from west to east. The mapping was effected by plane-table and compass, the use of the theodolite being found impossible.

NEW METEOROLOGICAL OBSERVATORY IN THE PHILIPPINES. The Philippines Weather Bureau has established a new meteorological and geodynamical observatory, at Baguio, under the direction of the Manila Observatory.

ORGAN OF THE GERMAN ASIATIC SOCIETY. The periodical *Asien,* the organ of the German Asiatic Society, formerly published by the house of H. Patel, has been suspended, as the Society decided to start a new journal on Oct. 1, last, with the name *Asiatische Zeitschrift,* which will be printed by Süsserott, Berlin.

FAMINE IN CHINA. The scene of the famine reported in China this Winter, is some ways inland from the east coast and from 100 to 170 miles north of the Yangtse River. Here in the northern part of Kiangsu and Anhwei Provinces, in an area about four times as large as our Long Island, live 3,000,000 people, most of them humble farmers, each family tilling an acre or two and, by intense methods of cultivation earning, in normal seasons, a comfortable subsistence. Their home is on a low alluvial plain, cut up in all directions by dikes and canals. In this region, last summer, occurred the heaviest rainfall ever known there. Floods descending from the surrounding hill districts covered the low fields and drowned the crops. The supply of food for this winter was lost and many thousands of families were suddenly thrown upon the charity of the world. According to newspaper reports, the Chinese Central Government and the people have been contributing much relief, but the amount is still insufficient. An international committee at Shanghai is trying to raise $1,000,000 to buy and forward food. The China Inland Mission of London recently announced that it would send to the Shanghai Committee all sums contributed to the famine fund.

AUSTRALASIA

Australian Meteorology. The Commonwealth Bureau of Meteorology, under Mr. Henry A. Hunt, is doing excellent work and publishing much of interest. *Bull.* No. 3, issued in Nov., 1909, deals with "The Remarkable Flood Rains over Southeastern Australia during the Winter of 1909." The weather conditions which gave rise to these flood rains are clearly described, and illustrated by means of a series of weather maps. *Bull.* No. 4, issued in Dec., 1909, is a discussion of the "Monthly Distribution of Australian Rainfall." This is an excellent presentation of the rainfall types and seasons of Australia. A chart shows, for each station, the monthly distribution of rainfall in percentages of the annual mean, the curve for the station being shown plotted on a small square of coordinate paper. By this means, the limits of the winter and summer rain types are clearly determined. A precisely similar method was adopted by Mr. W. G. Reed in his recent study of South American rainfall types (*Quart. Journ. Roy. Met. Soc.*, Jan., 1910). A rainfall map of Australia for 1909 has also recently been issued. R. DeC. W.

POLAR

Australian Antarctic Expedition Will Explore Wilkes Land. According to *Nature* (No. 2,152, Jan. 26, 1911) the starting of the Australian Antarctic Expedition seems now assured by the subsidies promised by the Australian Association for the Advancement of Science. The expedition will be under the command of Dr. Mawson, and it will enter the Antarctic field which now promises the most useful results. Many attempts have been made to discredit the existence of Wilkes Land, and it is obvious that Wilkes reported land farther to the north than it exists; nevertheless, his narrative offers convincing evidence that his expedition met land in that part of the Antarctic region. The Shackleton expedition has proved the extension of the land further west from Cape Adare, than any other expedition, and Dr. Mawson proposes to follow this coast-line further to the west, which was one of the unfilled parts of the programme of the *Discovery* expedition. The German Antarctic Expedition, under Prof. von Drygalski, established the existence of continental land south of Kerguelen. No accessible part of Antarctica offers such promising results as that selected by Dr. Mawson. The development of wireless telegraphy has already led to the suggested establishment of an Australian meteorological station on that part of the Antarctic coast, and this observatory may be hoped for ultimately.

Globus Merged with Petermanns Mitteilungen. *Globus* announces in its issue of Dec. 29, that with that number which completes Vol. XCVIII, it ceases to exist as a separate periodical. It now becomes a part of *Petermanns Mitteilungen.* The publishers say that the Gotha periodical will continue to give due attention to ethnographical science, which for so many years has been the leading feature of *Globus.*